Risk factors and outcomes for airway failure versus non-airway failure in the intensive care unit: a multicenter observational study of 1514 extubation procedures

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Résumé en anglais	Background Patients liberated from invasive mechanical ventilation are at risk of extubation failure, including inability to breathe without a tracheal tube (airway failure) or without mechanical ventilation (non-airway failure). We sought to identify respective risk factors for airway failure and non-airway failure following extubation. Methods The primary endpoint of this prospective, observational, multicenter study in 26 intensive care units was extubation failure, defined as need for reintubation within 48 h following extubation. A multinomial logistic regression model was used to identify risk factors for airway failure and non-airway failure. Results Between 1 December 2013 and 1 May 2015, 1514 patients undergoing extubation were enrolled. The extubation-failure rate was 10.4% (157/1514), including 70/157 (45%) airway failures, 78/157 (50%) non-airway failures, and 9/157 (5%) mixed airway and non-airway failures. By multivariable analysis, risk factors for extubation failure were either common to airway failure and non-airway failure: intubation for coma (OR 4.979 (2.797–8.864), P < 0.0001 and OR 2.067 (1.217–3.510), P = 0.003, respectively, intubation for acute respiratory failure (OR 3.395 (1.877–6.138), P < 0.0001 and OR 2.067 (1.217–3.510), P = 0.007, respectively, absence of strong cough (OR 1.876 (1.047–3.362), P = 0.03 and OR 3.240 (1.786–5.879), P = 0.0001, respectively, or specific to each specific mechanism: female gender (OR 2.024 (1.187–3.450), P = 0.01), length of ventilation > 8 days (OR 1.956 (1.087–3.518), P = 0.025), copious secretions (OR 4.066 (2.268–7.292), P < 0.0001) were specific to airway failure, whereas non-obese status (OR 2.153 (1.052–4.408), P = 0.036) and sequential organ failure assessment (SOFA) score ≥ 8 (OR 1.848 (1.100–3.105), P = 0.02) were specific to non-airway failure. Both airway failure and non-airway failure were associated with ICU mortality (20% and 22%, respectively, as compared to 6% in patients with extubation success, P < 0.0001). Conclusions Specific risk factors have been identified, allowing us to distinguish between risk of airway failure and non-airway failure. The two conditions will be managed differently, both for prevention and curative strategies.
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